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Case Report

Glued intraocular lens with descemet stripping endothelial keratoplasty in aphakic bullous keratopathy

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Introduction

Recent advances in the field of cataract surgery have reduced the number of surgical complications. However, pseudophakic and aphakic bullous keratopathy (ABK) still continue to account for approximately 13% of corneal transplantations in India.¹ Endothelial keratoplasty has now become the procedure of choice for treatment of these disorders. In spite of these advances, treatment of ABK still continues to pose a challenge as regards the visual outcome since any corneal transplantation procedure will not achieve good visual outcomes in the absence of an intraocular lens (IOL). The correction of aphakia in eyes with corneal decompensation and without capsular support is fraught with complications.² IOL implantation may be done concurrently or as a staged procedure.² Here, we report a case of ABK managed by scleral fixated IOL implantation and descemet stripping endothelial keratoplasty (DSEK) simultaneously as a single procedure with good postoperative visual outcome. This kind of procedure has rarely been reported in literature.

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Case report

A 70-year-old male patient underwent cataract surgery in the left eye four years back. There was a complication during the

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2

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surgery due to which IOL could not be implanted and the patient failed to regain good vision. He also had symptoms of redness, pain and watering in the same eye for which he reported to our center.

Ocular examination revealed distant visual acuity of 6/6 in right eye and hand movements close to face with accurate projection of rays in the left eye. Right eye examination was essentially within normal limits. On slit lamp examination of left eye, there was circumcorneal congestion. There was epithelial and stromal edema and multiple bullae present inferiorly. Superficial vascularization was seen from 6 to 8 o'clock. Anterior chamber did not show any cells or flare. A surgical peripheral iridectomy was seen at 10 o'clock and there was surgical aphakia. On distant direct ophthalmoscopy, a good fundal glow was seen in all quadrants. However, rest of the details could not be visualized (Fig. 1). Intraocular pressure was within normal limits in both eyes.

Based on the clinical features, a diagnosis of ABK was made.

Surgical technique

The patient underwent simultaneous scleral fixated IOL implant and DSEK in the left eye. Conjunctival peritomy was done for 180° from 3 to 9 o'clock. Two partial thickness scleral flaps of 1.5 mm were raised 1.5 mm from the limbus at 3 and 9 o'clock. Scleral pockets were dissected out superiorly and inferiorly. A 20 G micro-vitreo-retinal (MVR) blade was used to enter the pars plana region through the partial thickness scleral flaps. Superiorly, a 6 mm scleral tunnel was created. Anterior chamber was then entered and anterior vitrectomy was performed. A multipiece 6 mm rigid IOL was introduced superiorly. A MVR forceps was used to grasp the leading haptic which was brought out of the scleral tunnel at 3 o'clock. The haptic was tucked in through the scleral pocket superiorly. The second haptic was brought out through the scleral tunnel at 9 o'clock and tucked in through the scleral pocket inferiorly. The scleral flaps were repositioned using fibrin glue.

In the meantime, donor lenticule dissection was carried out on an artificial anterior chamber. The anterior lamella up to



Fig. 1 – Left eye of the patient showing corneal epithelial and stromal edema and multiple bullae. A surgical peripheral iridectomy is seen at 10 o'clock and there is aphakia.

pre-descemet level was dissected out and the remaining tissue was retained. The recipient bed was marked with an 8 mm trephine following which descemetorrhexis was carried out using a reverse Sinskey's hook through the superior scleral tunnel. A sheet glide was introduced into the anterior chamber. An 8.5 mm trephine was used to obtain the donor corneal button and the endothelial side was marked. The lenticule was placed over the sheet glide and inserted into the anterior chamber using a bent 26 G needle (cystitome). The sheet glide was then removed. Air was used to appose the donor lenticule to host stroma. The incision was closed using three 10-0 monofilament nylon sutures. Conjunctiva was then reposited back.

Postoperatively, the patient was started on tapering doses of topical steroids (prednisolone 1%), topical antibiotics (moxifloxacin 0.5%), and topical lubrication (hydroxypropylmethyl cellulose 0.3%). Strict supine position was maintained for the first 24 h.

Outcome and follow-up

The patient was followed up daily for 1 week, weekly for a month and monthly visits were continued for 6 months. On the first postoperative day, the donor lenticule was in place with mild corneal edema. The IOL was well centered. At 1 week follow-up, the patient had a distant visual acuity of 2/60 in the left eye and the corneal edema was resolving. At 6 months follow-up, the patient attained a best-corrected distant visual acuity of 6/18 in the left eye. The donor lenticule was well-adhered to the host cornea as seen on anterior segment OCT (Fig. 2). The cornea was clear with no bullae and IOL was well centered (Fig. 3). Fundus examination revealed a healthy optic disc and macula.

Discussion

The management of ABK involves replacement of the diseased cornea as well as placement of an IOL. The two procedures can be done in the same session or as a staged procedure. The treatment options available for corneal transplantation are penetrating keratoplasty (PK) and descemet stripping endothelial keratoplasty (DSEK/DSAEK). DSEK has largely replaced PK in the management of endothelial disorders such as aphakic and pseudophakic bullous keratopathy. Capsular support being absent in ABK, the options available are anterior chamber IOLs (ACIOLs), iris claw lenses and transsclerally fixated IOLs.

ACIOLs lead to corneal decompensation, damage to angle structures leading to secondary glaucoma, postoperative chronic uveitis and hyphaema.³ With iris claw lenses, complications of damage to angle structures are not seen but corneal endothelial damage still remains a problem.^{4,5} Moreover, iris claw lenses cannot be used in cases of deficient iris or inadequate iris support.

IOLs can be implanted in the posterior chamber either by transscleral fixation or interlocked with the iris in the retropupillary plane. Transscleral fixation can be done with sutures or using fibrin glue.⁶ The complications with these lenses are lens tilt, pupillary distortion, retinal detachment,

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